

RESEARCH ON THE APPLICATION OF  
UNISPAR MODEL IN INDUSTRIAL DESIGN

# 工业设计产学研实践

Duan Weibin 段卫斌 著

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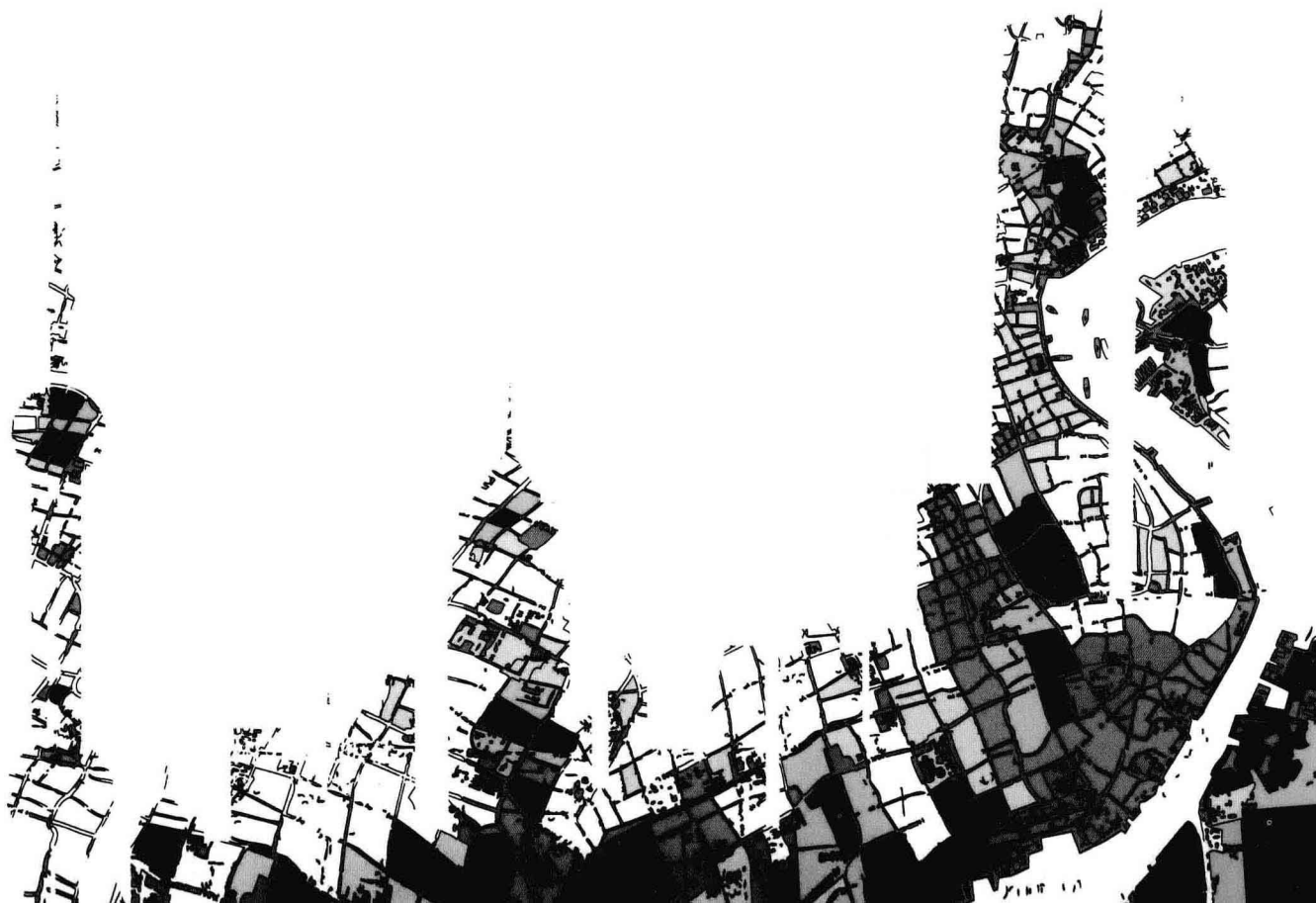


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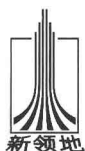
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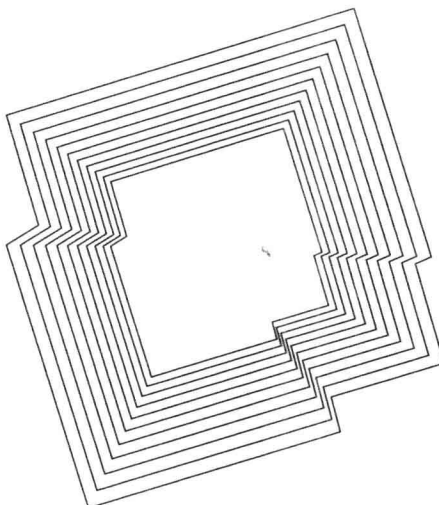
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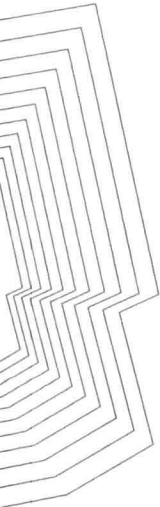


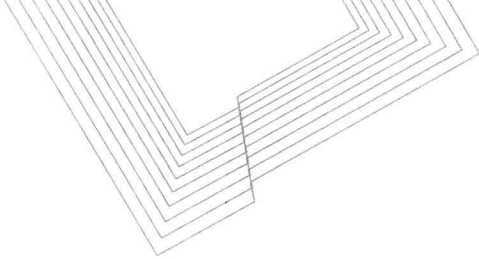


## 序 言

“产学研”已经不是一个新鲜的词汇。30年前，欧、美、日等国家和地区就十分重视产学研，并进行产学研政策的制定和立法。英国的联系计划（LINK）；德国对政府、大学和企业三大研究开发体系进行行政宏观管理；日本政府推出了“产业群”以及“知识密集区”建设计划，并支持大学建立知识产权部、技术转移中心（TLO）；意大利技术发展的政府管理模式，不同时期根据情况进行了不同程度的调整改革；瑞典实施了能力中心计划（Center for Excellence），在8所大学建立了28个能力中心；加拿大联邦制定研究联合会、省部间的合作和其他研究者资源集中共享的制度；韩国已建成的大学科学园区有几十个；丹麦在2003年的财政预算中专门拨款成立了“创新联合体”，旨在增强公共和私营研究机构之间的合作，并加强应用研究……

工业设计专业产学研教学模式改革的研究与实践，旨在探索工业设计专业在教学与研究上发挥产学研优势，将教学成果转化为社会价值，利用社会价值帮助贫困学生和在校相关专业学生，企业为学生提供平台，缓解大学生就业的系统模式，它将为中国艺术设计教育的未来提供一个可以拓展的空间，可以使工业设计的教学进一步贴近社会，更好地为寻求和利用社会资源提供理论依据；也可高校设计教育改革和设计院校产学研运作以及培养向复合型、宽口径、厚基础方向发展，培养可塑性强的工业设计人才提供实践经验。首先，从教学角度而言，对工业设计教育体系进行科学的论证与检验，希望能对现代





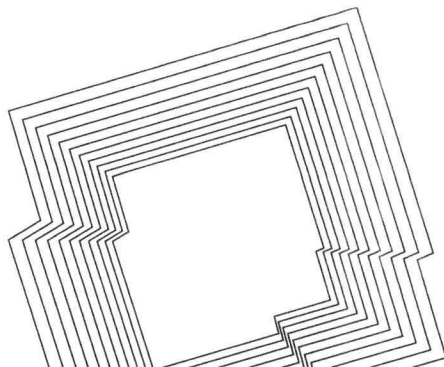
工业设计教学有一定的借鉴与参考作用；其次，针对日趋紧迫的大学生就业问题，迫使我们已从某种程度上禁锢大学生创新和实践能力的传统教学模式进行不断反思，对更新、更科学、更实际的教学方法进行不断的探索；再次，从社会经济角度而言，通过有效利用社会资源，学校、企业、学生可以达到“三赢”，“三合一”的产学研形式对于区域经济的建设又可起到积极的推动作用。

中国美术学院作为国内学科最完备、规模最齐整的第一所国立高等美术院校，始终站在时代艺术的前沿，对中国当代文化艺术的创新和拓展形成重要的影响，是中国最重要的高等艺术学府之一。中国美术学院上海设计学院是中国美术学院依据长三角特点在上海创办的综合的设计类二级学院，教学中坚持产学研相结合，是发挥地域优势、提高教学质量的桥梁，是改革教学模式、提高本科教学和研究生教学的重要途径。15年来，学院先后主持产学研实践课题140多项，充分利用学校与政府部门、企业、科研单位等多种不同教学环境和教学资源以及在人才培养方面的各自优势，把以课堂传授知识为主的学校教育与直接获取实际经验、实践能力为主的生产、科研实践有机结合的教育形式。

《工业设计产学研实践》是作者在伴随中国美术学院上海设计学院创办和发展的15年来学习、教学、科研、实践的一点心得和总结。撰写过程中，得到众多前辈和老师的悉心指导，对他们给予的教诲表示感谢！

段卫斌

2011年5月



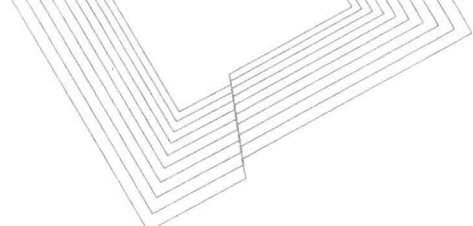


## Preface

The concept of a university, industry, and science partnership (UNISPAR) is nothing new. Thirty years ago, the United States, Japan and several European countries began embracing this kind of cooperation, establishing legal systems to guarantee its implementation. In the United Kingdom (or the UK), the government established the 'Link Program' while German governance created partnerships between universities and enterprises under a macro-management program. In Japan, the government put forward the 'Industrial Clusters' and 'Knowledge Intensive Areas' construction programs and encouraged the establishment of an intellectual property department and TLOs (Technology Licensing Offices) throughout colleges. In Italy, the government has taken vast measures to adjust the administrative model of technology development in different periods. In Sweden, twenty-eight 'Centers for Excellence' were established at eight universities by the government. Research unions in Canada established a system by which departments share resources while dozens of science parks have been created in South Korea. A 'Creative Union' was set up in 2003 by Denmark with the aim of strengthening the cooperation between public and private research.

The research and practice are carried out on the teaching model of integrating universities, industry and science in the fields of industrial design are aimed at exerting the advantages that industrial design holds, transferring the teaching achievements into social value and making full use of social resources to provide financial assistance to poverty-stricken families. This platform, formulated by enterprises, will ease the intense pressure in the job market while making art design education in China more accessible. Through this kind of partnership industrial design teaching will become more practical and use of social resources can be efficiently distributed using collected theoretical evidence. In the process of integrating university, industry and science, practical experiences will cultivate inter-disciplinary learning as institutions of art in higher education continue to reform.





First of all, the scientific evolution and examination of facilitating industrial design education is expected to be used as references for modern industrial design education. Secondly, the issue of employment forces us to constantly reflect on the traditional teaching model which, to some degree, stifles the innovative and practical ability of students to explore newer, more scientific and practical ways of learning. Thirdly, in terms of the social economy, effective use of social resources is a win-win situation for schools, enterprises and students. The formation of the "three-in-one" UNISPAR teaching model will play a promoting role in the construction of regional economies.

China Academy of Art is the first national institution of art in higher education in China, which has been the leader in influencing innovation and development of Chinese modern art. It has become the most prominent institution of art education. The Shanghai Institute of Design is a comprehensive subsidiary to the China Academy of Art founded in Shanghai relying on the characteristics of the Yangtze River Delta. In the process of teaching, we insist on the integration of university, industry, and research institutions to exert the regional superiority, in order to improve the teaching quality and to reform the model of teaching. During the past fifteen years, there have been more than 140 cooperative projects carried out in succession. According to the respective advantages that official sections, enterprises and research institutions hold, we have formed a new teaching model to combine education with productive and scientific practice, which enables students to acquire practical experience.

*RESEARCH ON THE APPLICATION OF UNISPAR MODEL IN INDUSTRIAL DESIGN* is an assemblage of experience and conclusions collected from the author's fifteen year tenure of research, study, and tutelage at the Shanghai Institute of Design. In composing this book, many of my peers lent a helping hand and I would like to express my heartfelt gratitude to them!

Duan Weibin

May 2011





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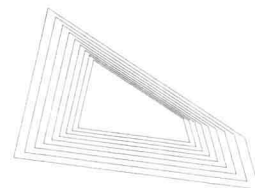
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# 第一章

## 国际工业设计的发展概况

第一节	工业设计——艺术与技术的融合
第二节	工业设计与大工业设计诠释
第三节	大工业生产与工业设计教育
第四节	国际背景下的中国工业设计专业传统教学模式

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## CHAPTER 1

### Overview of the Development of International Industrial Design

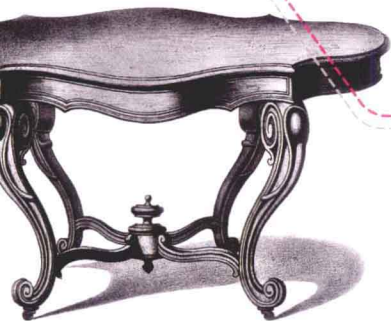
SECTION 1
Industrial Design — The Combination of Art and Technology
SECTION 2
The Interpretation of Industrial Design and Large Industrial Design
SECTION 3
Large-Scale Industrial Production and Industrial Design Education
SECTION 4
Traditional Chinese Teaching Model of Industrial Design

## 一、工业设计的由来

工业设计是大工业生产的产物。它的发展虽然只有短短的一百余年，却彻底改变了延续数千年的传统手工艺面貌。在这个过程中，现代工业设计的思想逐渐形成系统。

在现代工业设计诞生之前，人类的设计活动主要依靠手工劳动和手工艺设计活动。人类社会的发展，伴随着技术的进步，这一发展趋势决定了人类设计由手工艺设计活动向工业设计的转变。

工业革命成为这个历史时刻的转折点。在工业革命之前，劳动基本是建立在手工基础上完成的，材料的选择单一、原始，如泥土、木材、石料等，制品某种程度上受到原始材料和相对落后的加工手段、加工工具的制约而粗糙、笨拙。工业革命的爆发，为人类的发展带来了新的篇章，机器的大批量使用代替了原始的手工劳动，工业的发展带来了工业设计的产生，生产力得到了大幅度的提升，新材料的出现也使得标准化的新工业材料如金属、塑料等得到了广泛的应用，工业设计作为一种人类文明的行为奠定了其重要的地位。【注1】



## ◀ 西方传统的洛可可风格家具

Traditional western furniture with rococo style

## ▼ 工艺美术运动时期产品

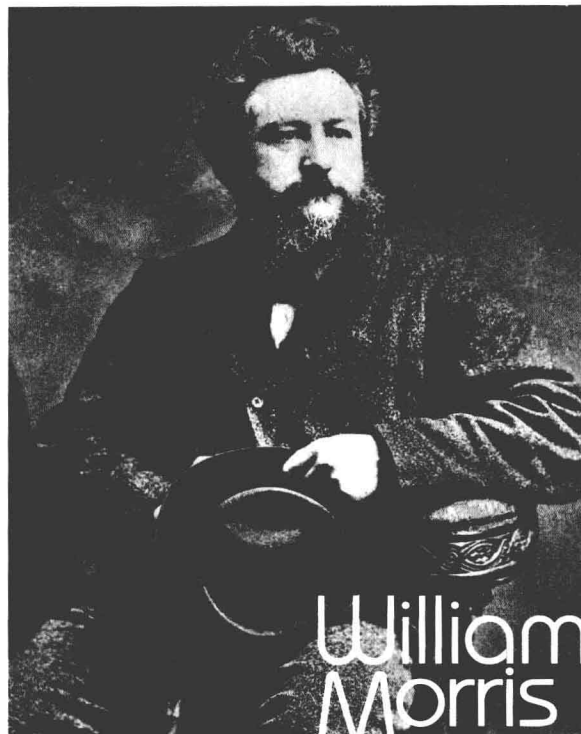
Products from the arts and crafts era

Vallée de Salon





▲ 约翰·拉斯金 John Ruskin



▲ 威廉·莫里斯 William Morris

## Part 1. History of Industrial Design

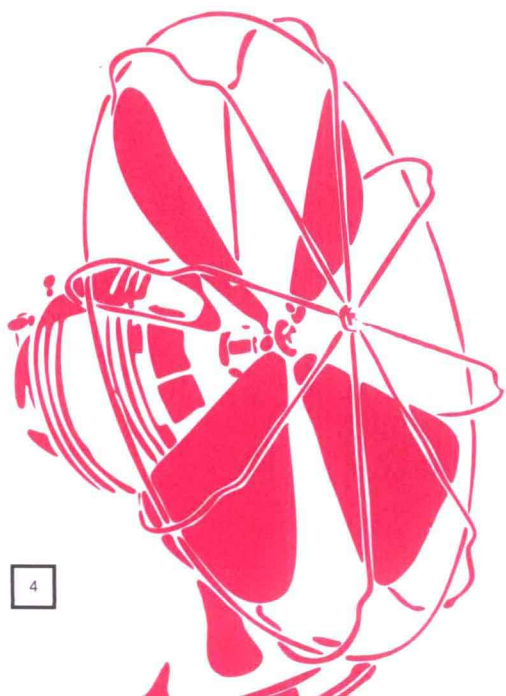
Industrial design is the result of large-scale industrial production. Within a relatively short period of time, industrial design completely transformed the tradition of craft design, thus, the philosophy of modern industrial design came to fruition. Before the birth of industrial design, activities related to design consisted of manual labor and craftsmanship. Development of society along with scientific technological advances conceived the landscape for which industrial design had become a defining moment in history. Prior to this era products were individually handmade. The essential materials used in those days included clay, wood, and stone, which were restricted by material properties, means of process and the quality of the laborers. But, a new leaf was turned when mass production replaced manual labor. The result was increased productivity and application of materials such as metal and plastic. Alas, the capacity to produce products on a large scale was able to meet the growing demands of society while the aesthetic design improved.



## 二、工艺美术运动、新艺术运动、现代主义设计运动的兴起

随着机器工业的发展，资本家以获得最大利润为目的，从事手工艺劳动的工匠与自由艺术家们也处于完全分离的状态。1851年在英国举办的伦敦万国博览会上，虽然展出了大量的工业制品，以此来炫耀工业革命所带来的伟大成果，但这些制品的外形都较简陋，工匠们简单的“装饰”无法来弥补外型的不足。将传统的形象美元素生硬的、简单的拼凑于现代化的机械产品上，今天看来似乎可笑，也正是这一现象激起了一股现代设计运动的兴起。以英国的约翰·拉斯金（John Ruskin）为代表的艺术家就十分反对将纯艺术应用与工业产品之上。他们主张艺术家从事产品设计，要求技术与美术结合，提倡回归自然，同时必须导入设计实用性的原则，作品必须适合于某一特定的场所，从属于某一特定的目的，必须为大众而服务。现代工业设计思想的启蒙状态就此开始产生。19世纪下半叶，以英国设计家、现代设计运动的先驱威廉·莫里斯（William Morris）为首的艺术家用发动了一场非常重要的设计运动——工艺美术运动。

工艺美术运动也是具有代表性的艺术活动，设计形式上以大量动、植物为元素进行纹样装饰，大多借鉴中世纪的哥特式风格，主张师法自然，注重材料的选择，追求质朴、大方、实用。但他们同时也具有非常致命的局限，那就是对机械化大批量生产的抵制。他们认为机械生产丧失人性，是美的天敌，而只有手工产品才可能是美的，这种想法虽然违背了工业化发展的历史潮流，但客观上他们也唤醒了人们对于产品造型的重视，提出的“艺术与技术结合”、“合适的设计”等观点，为现代设计的发展提供了营养。在他们的影响下，欧洲大陆又掀起了另一场设计运动——新艺术运动。



**AEG**  
**VENTILATOREN**

## Part 2. The Arts and Crafts Movement, Art Nouveau, and the Modern Design Movement

With the progression of machine industry, capitalists focused on maximizing profits and the craftsmen and artists at that time were still in a state of complete separation. The 1851 Great Exhibition of the Works of Industry of all Nations held in London celebrated the achievements of modern industrial design brought about by the industrial revolution. Great achievements notwithstanding, the products displayed were not aesthetically appealing, indicative of an obvious lack of artistic sense to apply traditional elements to the modern machinery products. This social phenomenon essentially created the rise of the modern design movement. British artists John Ruskin, among others, strongly opposed the combination of pure art and industrial products. They argued that artists engaged in product design were expected to combine technology and art, and follow the design principle of practicality. Works had to be suitable for a particular place, with a specific purpose and at the public's service. From then on, modern industrial design came into a state of enlightenment. In the latter-half of the 19th century, William Morris, a British designer and pioneer of the modern design movement, led the arts and crafts movement.

The arts and crafts movement emphasized use of animals, plants and other natural elements for decorative patterns. The medieval gothic style was widely used for reference. Designers were encouraged to imitate nature, attaching more importance to the choice of materials. Such products featured simplicity, generosity and practicality while enjoying great popularity. Unfortunately, these efforts faced resistance as mechanized mass production was thought to lack humanity and such products were the enemy of beauty. It was believed that only manual works could reflect the beauty of human. Obviously, the idea contradicted the historical trend of industrialization. This movement enlightened the public to the importance for product modeling. The concepts of 'combining art with technology' and 'appropriate design' advocated during the movement nurtured the development of modern design. Inspired by these ideas, a new art movement was launched in Europe. It is known as art nouveau.



▲ 包豪斯校舍为建筑领域带来了一场革命

School buildings in Bauhaus brought about a revolution in the field of architecture

► 包豪斯创始人之一瓦尔特·格罗佩斯

One of founder of the Bauhaus — Walter Gropius

新艺术运动和工艺美术运动一脉相承，反对机器生产，但是在设计理念上摒弃了传统风格，转而往完全的自然主义方向发展，强调了曲线和自然形态的运用，这一时期出现了一些重要人物，为新艺术运动过渡到现代工业设计时代作出了重要贡献。其中的代表性人物凡·德·维尔德就率先肯定了机器时代给人类文明带来的进步，他本人也同时进行了大量的教学和设计实践活动。提出了“技术是产生新文化的重要因素”这一突破性的观点。在产品设计结构合理、材料运用准确、工作程序明确清楚等方面做出重要的研究，认为这三个要素是设计工作中的三大原则。对现代设计理论的发展起到了积极的作用。同时美国的弗兰克·赖特等开始采用一些比较理性的几何形态进行设计，为设计的进一步发展提出了大胆的思路。

20世纪初期，随着工业技术的进一步发展，越来越多的设计师与艺术家意识到了社会现代化进程的趋势和方向，开始探索新工业条件下的设计模式、设计风格以及设计理念，于是一场真正意义上的设计革命——现代主义设计运动终于开始。它既建立在大工业生产、现代科技发展的基础上，又为社会进行设计服务。在这期间，现代设计发展逐渐形成了三个运动中心：一是追求新美学、新形式的荷兰风格派运动；二是在十月革命胜利后的苏联所产生的构成主义；三是德国包豪斯设计学校的建立，她的建立成为现代设计主义运动的核心。【注2】



Art nouveau was derived from the arts and crafts movement in apparent opposition from mechanized production. Traditional design style and technique have been long abandoned, replaced with an emphasis using curves and natural forms. During this period, distinguished artisan's made great contributions to the transition from the new art movement to modern industrial design. Henry Van de Velde was one of the representatives of this era. He held an affirmative attitude to the contribution machinery had made to civilization. He himself carried out a great deal of teaching and design practices. Van de Velde is noted for saying, "technology is an important factor for the birth of a new culture." He also made important strides in developing the rational for product design structure, proper selection of materials and precise procedures for production. These three points were regarded as the main principles in design. His ideas played a pivotal role in the development of modern design theory. Meanwhile, American designers like Frank Lloyd Wright started to apply geometric forms to his design, a bold idea that would advance the development of modern design.

In the early 20th century, with the advanced development of industrial technology, artists and designers became more aware of social modernization trends. Many of them started to explore new design patterns, styles and concepts. From this point forward, the modern design movement had officially planted its stake in design theory. It was based on large-scale industrial production and the development of modern technology that provided design services. Hence, the revolution allowed for the gradual evolution of the movement. First, the Dutch De Stijl movement featured the pursuit of new aesthetics and patterns. Following the victory of the October Revolution, the concept of constructivism gained steam. Then the Bauhaus Design School in German was built and was considered the core of the modern design movement.

▼ 包豪斯校舍 Bauhaus school building

